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California Airborne Toxic Control Measures for Particulate Matter Emissions from Diesel-Fueled Engines

AIR FORCE Space & Missiles 1954 - 2004

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30 CES/CEVC
8 April 2004

Purpose

- **This briefing provides insight to state regulations regarding diesel-fueled internal combustion engines (ICE)**
- **California Air Resources Board (CARB) airborne toxic control measures (ATCMs) require particulate matter (PM) emission control strategy implementation**
- **New ATCMs will require installation of expensive diesel PM control devices, alternative fuels, or purchasing of new ICEs**
- **Emission standard compliance determinations require off-road certification data, pre and post-control emission stack testing, or test data manufacturer certification**
- **Enforcement of ATCMs to be performed by local APCD and CARB**

Overview ATCM

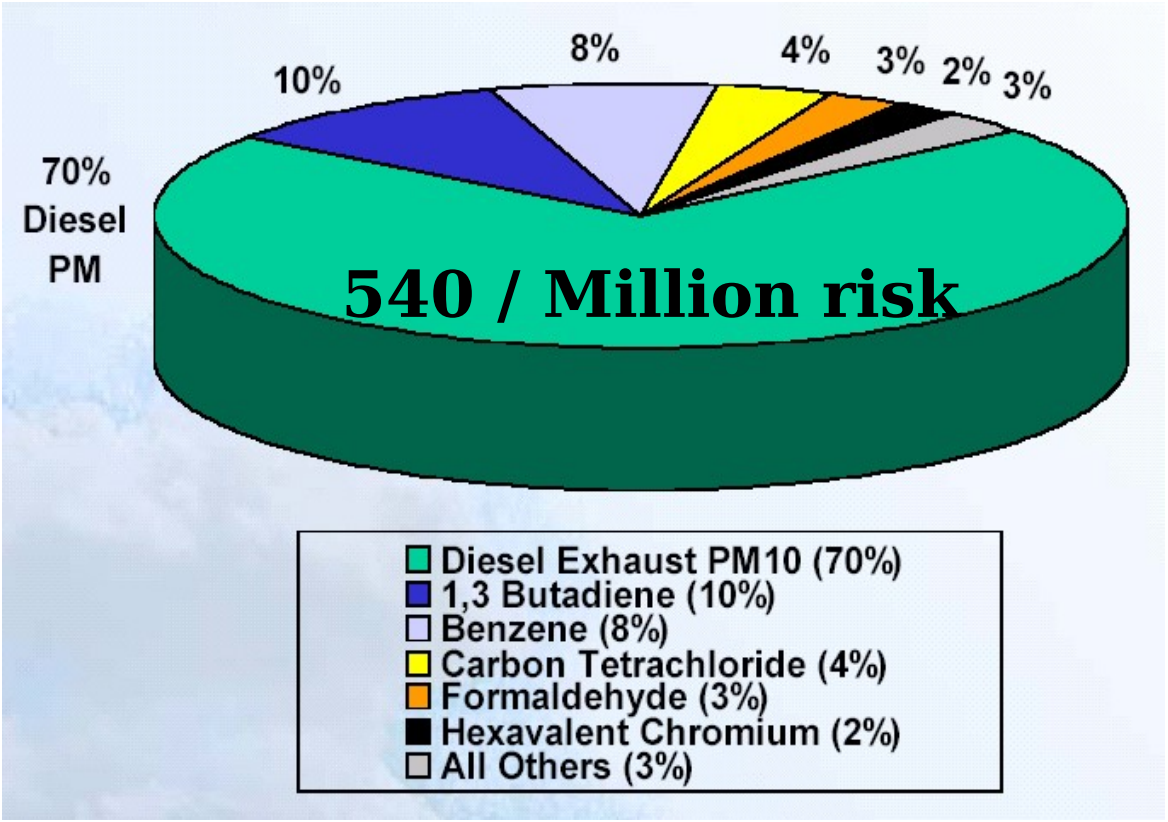
Overview
Diesel Population

- **Over 1.2 Million Diesel ICEs in California**

Category	Population (in 2000)
Trucks	700,000
Off-road equipment	500,000
Stationary and portable	65,000

Overview - Cancer Health Risk

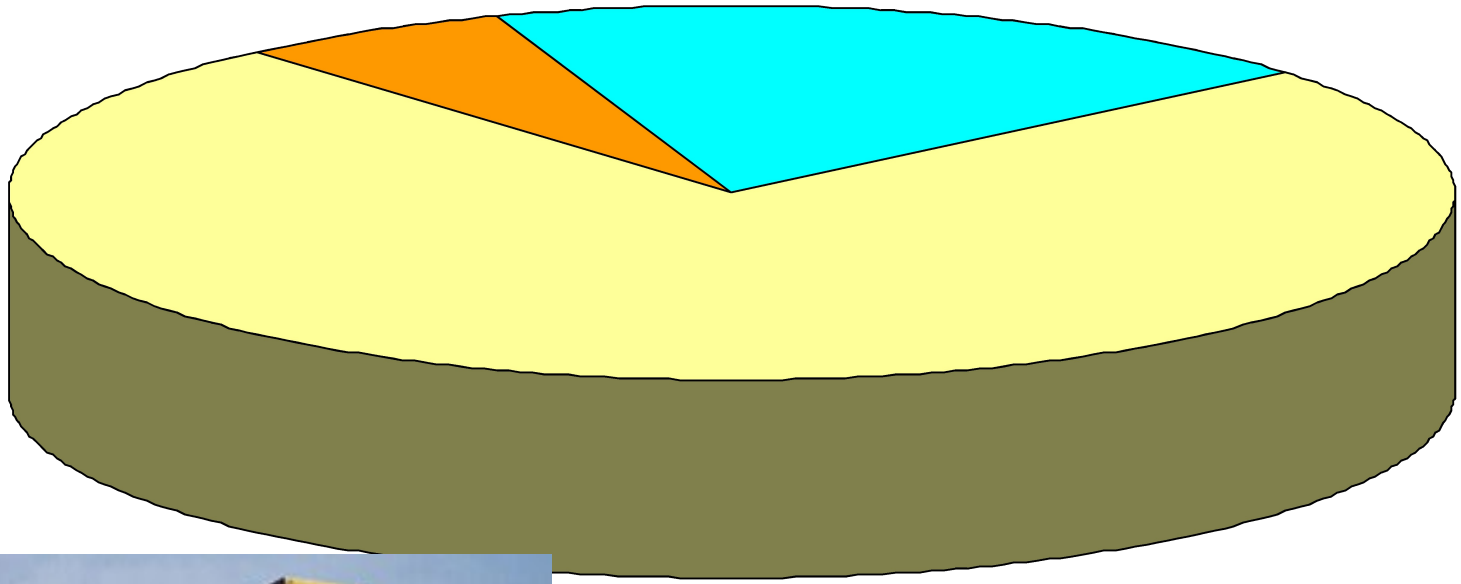
- **Toxic Air Contaminants; Statewide Average Potential Ambient Air Cancer Risks for 2000**



Overview - Diesel PM Emissions by Category

Stationary / Area Sources 6%

On-Road 20%



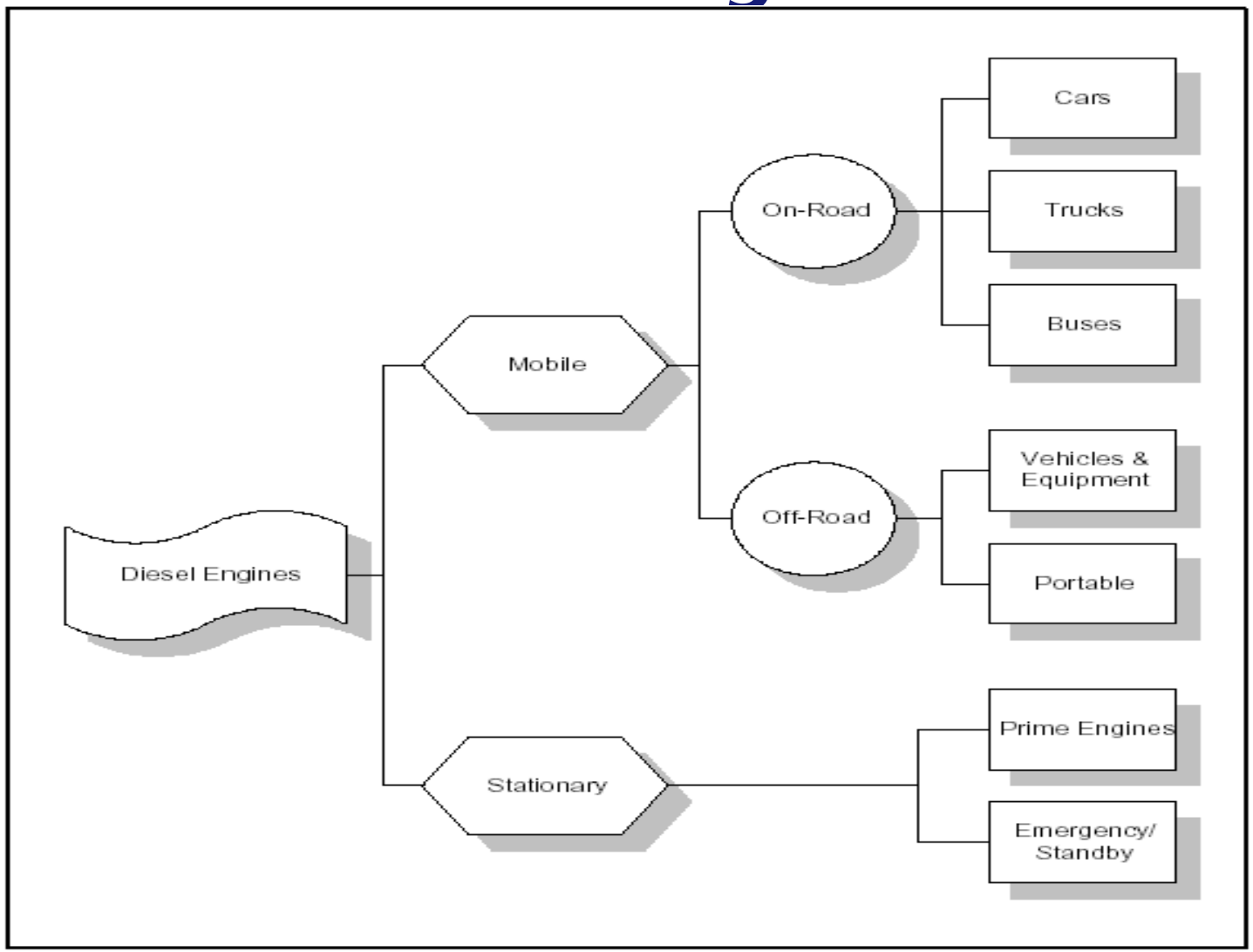
Off-Road 74%

Overview - Diesel PM Emissions

Overview - Regulations

- **CARB Developing Diesel Particulate Matter ATCMs for:**
  - **Stationary ICEs**
  - **Portable ICEs**
  - **Transportation Refrigeration Units (TRUs)**
  - **Mobile ATCMs:**
    - **Municipality Fleets – On and off road**
    - **Transit Agencies – Non Urban Busses**
    - **Solid Waste Collection Vehicles**
    - **School Bus Idling**
    - **On Road Truck Idling**
    - **Private Fleets – On and Off Road (Future)**

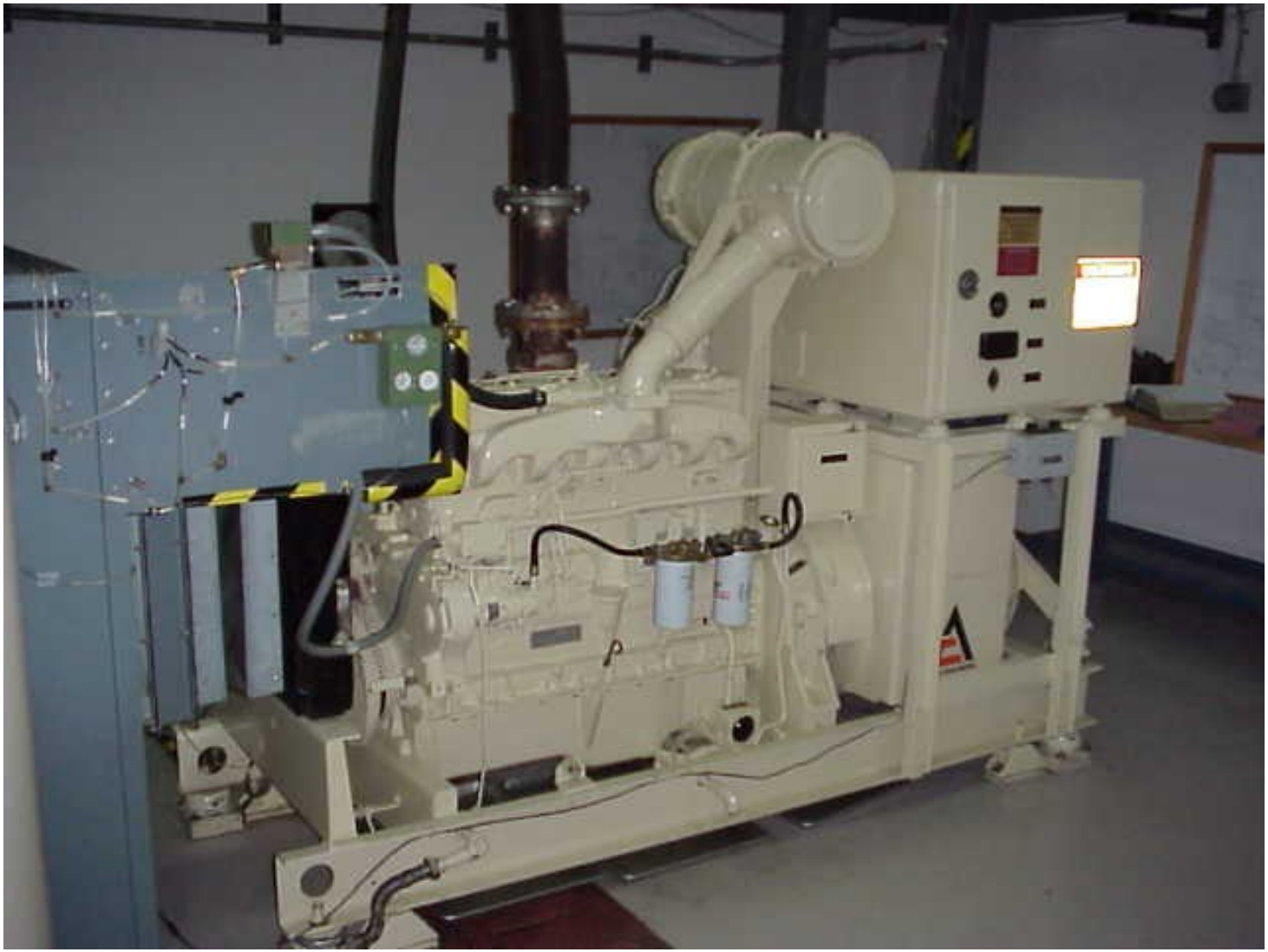
Overview - CARB Diesel Organization



Overview - ICE ATCM Schedule

- Stationary ATCM received CARB Board approval 26 Feb 04
- Portable ATCM received CARB Board approval 26 Feb 04
- TRU ATCM received CARB Board approval 26 Feb 04
- SWC Vehicles received CARB Board approval 25 Sep 03
- School Bus Idling final regulation codified June 2003
- Municipality Fleets – On road scheduled for CARB Board 2004
- Transit Agencies and Non Urban Busses to CARB Board 2004
- On Road Truck Idling scheduled for CARB Board 2004
- Private Fleets – On and Off Road scheduled for CARB Board 2005

Stationary ATCM



Stationary ATCM Applicability/Exemptions

- **Applies to:**
  - **any person who sells, offers for sale, leases or purchases, owns or operates a stationary diesel-fueled ICE >50 hp**

- **Exemptions:**
  - **Prime ICEs operated < 20 hours per year**
  - **ICEs providing motive power for on/off-road vehicles**
  - **Direct-drive fire water pump engine**
  - **In-use Agricultural ICEs (ATCM being developed separately)**
  - **Stationary Tactical Support Equipment (TSE) used solely for training**
  - **ICEs associated with marine vessels**

Stationary ATCM Standards

- **In-use ICE: 0.01 grams/brake horsepower-hour (g/hp-hr-PM) standard or 85% PM reduction from baseline**
- **New ICE: 0.01 g/bhp-hr standard**
- **Backup Generator (BUGs): Tiered PM emission standards**
- **Replacement ICE must meet new ICE ATCM requirements**
- **Ultra Low Sulfur Diesel (15 ppm CARB Diesel) mandated**
- **In meeting the required PM standards NMHC, NOx or CO emissions may not increase by 10% above baseline levels**

Stationary ATCM Compliance

- Installation of approved non-resettable hour meters
- Source testing
- Off-road certification test data
- Test from a similar ICE
- Engine manufacturer test data
- Emissions verification procedure test data
- Recordkeeping, Reporting, and Monitoring (RRM)

Stationary ATCM Schedule

- **Owners/Operators of an existing stationary ICE (Prime and E/S) must meet the following schedule of compliance:**
  - **Pre-1989: 1 Jan 06**
  - **1990-1995: 1 Jan 07**
  - **Post 1996: 1 Jan 08**
- **Four or more ICEs are provided flexibility to phase in with a final compliance date of 1 Jan 09**
- **Beginning 1 Jan 05, new stationary ICEs (Prime, E/S, AG) must be in compliance with the standard**
- **Use of ULSD fuel implementation begins 1 Jul 06**

Portable ATCM

Portable ATCM Applicability/Exemptions

- **Applies to:**
  - **Any person who sells, offers for sale, leases, purchases, owns or operates a portable diesel-fueled ICE > 50 BHP**
- **Exemptions:**
  - **Tactical Support Equipment (TSE)**
  - **Emergency and low-use ICEs (exempt from fleet requirements)**

Portable ATCM Standards

- **ICEs must meet Fleet Emission Standards for PM by 2010, 2013, 2017, and 2020**

- **2010: Equates to a Tier I, II or III ICE**

- **2013: Equates to a Tier II or Tier III ICE**

- **2017: Equates to a Tier IV replacement or Level 3 control on ½ of Tier II or Tier III ICE Fleet**

- **2020: Equates to a Tier IV replacement or Level 3 control on the remainder of the Tier II or Tier III ICE Fleet**

Portable ATCM Compliance

- **Installation of approved non-resettable hour meters**
- **Off-road certification test data**
- **Engine manufacturer test data**
- **Emissions verification procedure test data**
- **RRM**

Portable ATCM Schedule

- **Tier I, II, or III EPA/CARB off-road engine standards by 2010**

- **Fleets of portable ICEs must meet PM engine averages becoming more stringent in 2013, 2017 and 2020**

- **If applicable, installation of Tier IV ICEs beginning 2011-2013**

Municipality ATCM

Municipality Applicability/Exemptions

- **Applicability:**
  - **Vehicles owned and operated by municipality**
  - **Includes leased vehicles operated by the municipality**
  - **Does not include contract fleets**
- **Exemptions:**
  - **Low use vehicles (Proposed)**
  - **TSE**

Municipality ATCM Standards

- **ICE Certified to 0.01 g/bhp-hr PM or 0.1 g/bhp-hr plus retrofit with highest level verified DECS**
- **Alternative-fuel or heavy-duty pilot ignition engine certified to lowest optional PM standard**
- **Retrofit with highest level verified DECS**
- **Once in compliance always In compliance**
- **Mandates use ultra-low sulfur diesel (ULSD) fuel by 1 Jan 2005**
- **Alternative diesel fuel if verified as a DECS**

Mobile ATCM RRM

- **Records Kept Accessible at Vehicle Location:**
  - **A list identifying vehicle type, engine manufacturer, engine model**
  - **The DECS installed for each vehicle**
  - **Maintenance records on DECS**
  - **Fuel purchase documentation (Fuel DECS)**

- **Records Kept in the Vehicle:**
  - **Labeling requirement**
  - **Installation date of a DECS**
  - **Engine model year and planned compliance date**
  - **Exemption information (i.e., retirement date, experimental permit info, etc.)**

Summary

- **New ATCMs will require installation of expensive diesel PM control devices, alternative fuels, or purchasing of new ICEs**

- **Emission standard compliance determinations requires off-road certification data, pre and post-control emission stack testing, or test data manufacturer certification**

- **Enforcement of ATCMs performed by local APCD and CARB**

- **APCDs may pursue permit requirements for previously exempt emergency ICEs and for installation of control devices on stationary ICEs**

Summary

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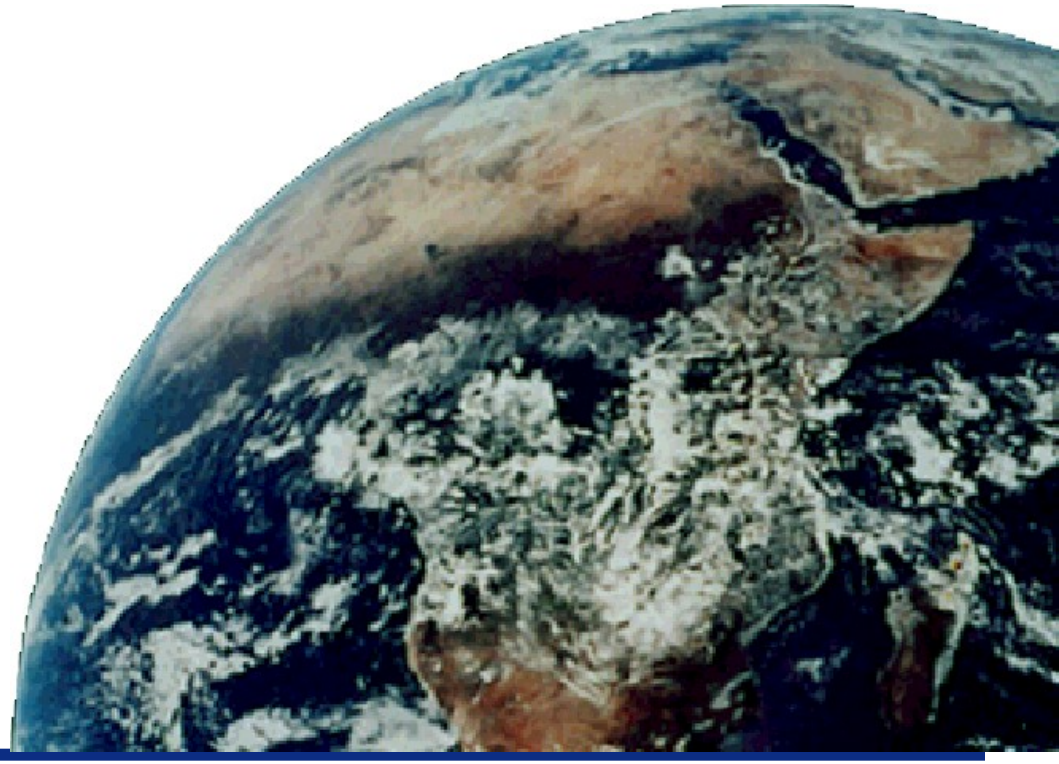

CARB Website and Links

- California's Diesel Risk Reduction Program - http://www.arb.ca.gov/diesel/dieselrrp.htm

- Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles -http://www.arb.ca.gov/diesel/documents/rrpapp.htm

- Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines - http://www.arb.ca.gov/diesel/documents/rmgFinal.pdf

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